AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-9 (cancelled).

10 (new). A brain rescue instrument for use in identifying, monitoring, and guiding the application of brain therapies to patients at risk of secondary phase brain damage including delayed neuronal death, comprising:

input means for acquiring a group of signals each indicative of a different biochemical or biophysical parameter of a patient and the behavior of which group of signals over time is indicative or predictive of developing secondary phase damage or a risk thereof,

computing means configured to continuously process and display to a user the acquired signals or information obtained therefrom on one or more time scales which show variations in the signals which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage, and wherein said group of signals includes an EEG signal or signals and one or more of:

a signal or signals indicative of brain edema,

a signal or signals indicative of seizures,

a signal or signals indicative of one or more of core body temperature, cerebral temperature, and scalp or skin temperature.

11 (new). A brain rescue instrument according to claim 10 wherein said EEG signals comprise signals from the both left and right hemispheres.

12 (new). A brain rescue instrument according to claim 10 wherein said signal or signals indicative of brain edema include one or more of a signal indicative of brain tissue impedance, a signal indicative of cytotoxic edema, a signal indicative of vasogenic edema, a signal indicative of intracranial pressure, and a signal indicative of cerebral perfusion pressure.

13 (new). A brain rescue instrument according to claim 10 wherein said group of signals further includes one or more of:

an ECG signal,

a signal indicative of cerebral lactate level(s),

a signal indicative of cerebral oxygen consumption,

a signal or signals obtained from the EEG signal(s) indicative of one or both of seizure and spike activity,

a signal or signals indicative of brain edema,

a signal indicative of cerebrovascular status,

a signal indicative of cerebral hemorrhage,

a signal indicative of cerebral blood flow, and

a signal indicative of blood pressure.

14 (new). A brain rescue instrument according to claim 13 wherein said signal or signals indicative of brain edema include one or both of a signal indicative of brain tissue impedance and a signal indicative of cytotoxic edema.

15 (new). A brain rescue instrument useful in the detection and management of post insult seizures in patients comprising input means for acquiring a group of signals each indicative of a different biochemical or biophysical parameter of a patient and the behavior of which group of signals over time is indicative or predictive of developing secondary phase damage or a risk thereof and computing means configured to continuously process and display to a user the acquired signals or information obtained therefrom on one or more time scales which show variations in the signals which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage, wherein said group of signals includes an EEG signal or signals; a signal or signals obtained from the EEG signal indicative of one or more of (i) one or both of cortical seizure and spike activity, (ii) the level and frequency of background EEG activity, and (iii) the spatial distribution of EEG derived signals; and a signal or signals indicative of one or more of:

movement, muscle activity or artefact,

heart rate,

blood pressure,

cerebral blood flow,

cerebral haemodynamic status,

brain edema,

one or more of core body temperature, cerebral temperature, and scalp or skin temperature.

16 (new). A brain rescue instrument according to claim 15 wherein said signal or signals indicative of brain edema include one or more of a signal indicative of brain tissue impedance and a signal indicative of cytotoxic edema.

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17 (new). A brain rescue instrument according to claim 10 wherein said group of signals further includes a signal indicative of heat transfer device function; and a signal or signals indicative of one or both of brain edema and cardiovascular compromise.

18 (new). A brain rescue instrument according to claim 17 wherein said signal or signals indicative of brain edema include one or more of a signal indicative of brain tissue impedance, a signal indicative of cytotoxic edema, a signal indicative of vasogenic edema, a signal indicative of intracranial pressure, and a signal indicative of cerebral perfusion pressure.

19 (new). A brain rescue instrument according to claim 17 wherein said signal or signals indicative of cardiovascular compromise include one or more of an ECG signal, a signal indicative of blood pressure, and a signal indicative of systemic lactate level(s).

20 (new). A brain rescue instrument according to claim 10 wherein said group of signals further includes a signal or signals obtained from the EEG signal or signals indicative of one or both of seizure and spike activity; and a signal indicative of one or more of:

cerebral oxygenation,

blood pressure,

cerebral blood flow,

B1 systemic glucose level(s),

cerebral hemorrhage,

cerebral lactate level(s),

cerebral glucose level(s), and

cytotoxic edema.

21 (new). A brain rescue instrument according to claim 20 wherein said signal or signals indicative of brain edema include one or more of a signal indicative of brain tissue impedance, a signal indicative of cytotoxic edema, a signal indicative of vasogenic edema, a signal indicative of intracranial pressure, and a signal indicative of cerebral perfusion pressure.

22 (new). A brain rescue instrument according to claim 10 wherein said group of signals further includes a signal indicative of one or more of:

cerebral haemodynamic status,

cerebrovascular status, and

excitotoxic activity.

23 (new). A brain rescue instrument according to claim 22 wherein said signal or signals indicative of brain edema include one or more of a signal indicative of brain tissue impedance, a signal indicative of cytotoxic edema, a signal indicative of vasogenic edema, a signal indicative of intracranial pressure, and a signal indicative of cerebral perfusion pressure.

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24 (new). A brain rescue instrument according to claim 10 wherein said group of signals further includes one or more signals obtained from the EEG signal or signals indicative of one or both of seizure and spike activity; and a signal or signals indicative of one or more of:

cerebral oxygenation,

blood pressure,

cerebral blood flow,

systemic glucose level(s),

cerebral hemorrhage,

cerebral lactate level(s),

cerebral glucose level(s),

cytotoxic edema, and

excitotoxic activity.

25 (new). A brain rescue instrument according to claim 24 wherein said signal or signals indicative of brain edema include one or more of a signal indicative of brain tissue impedance, a signal indicative of cytotoxic edema, a signal indicative of vasogenic edema, a signal indicative of intracranial pressure, and a signal indicative of cerebral perfusion pressure.

26 (new). A brain rescue instrument according to claim 10 arranged to highlight variations in at least some of the displayed signals or information which are indicative or predictive of secondary phase brain damage.

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27 (new). A brain rescue instrument according to claim 13 arranged to highlight variations in at least some of the displayed signals or information which are indicative or predictive of secondary phase brain damage.

28 (new). A brain rescue instrument according to claim 15 arranged to highlight variations in at least some of the displayed signals or information which are indicative or predictive of secondary phase brain damage.

29 (new). A brain rescue instrument according to claim 17 arranged to highlight variations in at least some of the displayed signals or information which are indicative or predictive of secondary phase brain damage.

30 (new). A brain rescue instrument according to claim 20 arranged to highlight variations in at least some of the displayed signals or information which are indicative or predictive of secondary phase brain damage.

31 (new). A brain rescue instrument for use in identifying, monitoring, and guiding the application of brain therapies to patients at risk of secondary phase brain damage including delayed neuronal death, comprising:

input means for acquiring a number of signals each indicative of a different biochemical or biophysical parameter of a patient,

selection means enabling a user to view groups of said signals, the behavior of each group of signals over time being indicative or predictive of developing secondary phase damage or a risk thereof, and

computing means configured to continuously process and display to a user the selected group of signals or information obtained therefrom on one or more time scales which show variations in the selected signals which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

32 (new). A brain rescue instrument according to claim 31 wherein said groups of signals comprise two or more groups of signals selected from:

(I) a group of signals useful in early prediction of risk of secondary damage, that can aid in the selection of patients for rescue therapy, including an EEG signal or signals and one or more of:

an ECG signal,

a signal indicative of cerebral lactate level(s),

a signal indicative of cerebral oxygen consumption,

a signal or signals obtained from the EEG signal(s) indicative of one or both of seizure and spike activity,

a signal indicative of brain edema,

a signal indicative of cerebrovascular status,

B1 a signal indicative of cerebral haemodynamic status,

a signal indicative of cerebral hemorrhage,

a signal indicative of cerebral blood flow, and

a signal indicative of blood pressure;

(II) a group of signals useful in the detection and management of post insult seizures in patients, including an EEG signal or signals; signals obtained from the EEG signal or signals indicative of one or more of (i) one or both of cortical seizure and spike activity, (ii) the level and frequency of background EEG activity, and (iii) the spatial distribution of EEG derived signals; and a signal or signals indicative of one or more of:

movement, muscle activity or artefact,

heart rate,

blood pressure,

cerebral blood flow,

cerebral haemodynamic status,

brain edema,

one or more of core body temperature, cerebral temperature, and scalp or skin temperature;

(III) a group of signals useful in patient monitoring during hypothermia therapy, including an EEG signal or signals; a signal or signals indicative of one or more core body temperature; cerebral temperature, and scalp or skin temperature; a signal indicative of heat transfer device function; and a signal or signals indicative of one or more of brain edema and cardiovascular compromise; and

(IV) a group of signals useful in monitoring the brain status of patients for signs or secondary phase damage or a risk thereof including an EEG signal or signals; a signal or signals obtained from the EEG signal or signals indicative of one or both of seizure and spike activity; a signal or signals indicative of one or more of core body temperature, cerebral temperature, and scalp or skin temperature; a signal indicative of brain edema; and a signal indicative of one or more of:

cerebral oxygenation,

blood pressure,

cerebral blood flow,

systemic glucose level(s),

cerebral hemorrhage,

cerebral lactate level(s),

cerebral glucose, and

cytotoxic edema.

(V) a group of signals useful in monitoring the brain status of the evolving or secondary phases or neural injury of patients, including an EEG signal or signals; one or more signals obtained from the EEG signal or signals indicative of one or both of

seizure and spike activity; a signal indicative of brain edema; and a signal indicative of one or more of:

cerebral oxygenation,

cerebral blood flow,

cerebral haemodynamic status,

cerebrovascular status,

cerebral hemorrhage,

cerebral lactate level(s),

cytotoxic edema,

cerebral glucose level(s),

excitotoxic activity.

(VI) a group of signals useful in monitoring to predict risk of secondary phase damage to assist with minimization of delayed damage, including an EEG signal or signals; one or more signals obtained from the EEG signal or signals indicative of one or both of seizure and spike activity; a signal indicative of one or more of core body temperature, cerebral temperature, and scalp or skin temperature; a signal indicative of brain edema; and a signal or signals indicative of one or more of:

cerebral oxygenation,

blood pressure,

cerebral blood flow,

systemic glucose level(s),

cerebral hemorrhage,

cerebral lactate level(s),

cerebral glucose level(s),

cytotoxic edema, and

excitotoxic activity.

33 (new). A brain rescue instrument according to claim 32 wherein said signal or signals indicative of brain edema include one or more of a signal indicative of brain tissue impedance, a signal indicative of cytotoxic edema, a signal indicative of vasogenic edema, a signal indicative of intracranial pressure, and a signal indicative of cerebral perfusion pressure.

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34 (new). A brain rescue instrument according to claim 31, arranged to highlight variations in at least some of the displayed signals of the selected group which are indicative or predictive of secondary phase brain damage.

35 (new). A brain rescue instrument according to claim 32, arranged to highlight variations in at least some of the displayed signals of the selected group which are indicative or predictive of secondary phase brain damage.

36 (new). A brain rescue instrument according to claim 10 wherein said computing means is arranged to apply to at least some of the signals or information obtained therefrom expert analytical rules based on knowledge of the behavior of the signals over time during developing secondary phase brain damage, and to display to a user the signals or information obtained therefrom in a way which highlights variations

identified by application of said expert analytical rules which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

37 (new). A brain rescue instrument according to claim 11 wherein said computing means is arranged to apply to at least some of the signals or information obtained therefrom expert analytical rules based on knowledge of the behavior of the signals over time during developing secondary phase brain damage, and to display to a user the signals or information obtained therefrom in a way which highlights variations identified by application of said expert analytical rules which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

38 (new). A brain rescue instrument according to claim 13 wherein said computing means is arranged to apply to at least some of the signals or information obtained therefrom expert analytical rules based on knowledge of the behavior of the signals over time during developing secondary phase brain damage, and to display to a user the signals or information obtained therefrom in a way which highlights variations identified by application of said expert analytical rules which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

39 (new). A brain rescue instrument according to claim 15 wherein said computing means is arranged to apply to at least some of the signals or information obtained therefrom expert analytical rules based on knowledge of the behavior of the signals over time during developing secondary phase brain damage, and to display to a

user the signals or information obtained therefrom in a way which highlights variations identified by application of said expert analytical rules which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

40 (new). A brain rescue instrument according to claim 17 wherein said computing means is arranged to apply to at least some of the signals or information obtained therefrom expert analytical rules based on knowledge of the behavior of the signals over time during developing secondary phase brain damage, and to display to a user the signals or information obtained therefrom in a way which highlights variations identified by application of said expert analytical rules which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

41 (new). A brain rescue instrument according to claim 20 wherein said computing means is arranged to apply to at least some of the signals or information obtained therefrom expert analytical rules based on knowledge of the behavior of the signals over time during developing secondary phase brain damage, and to display to a user the signals or information obtained therefrom in a way which highlights variations identified by application of said expert analytical rules which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

42 (new). A brain rescue instrument according to claim 31 wherein said computing means is arranged to apply to at least some of the signals or information obtained therefrom expert analytical rules based on knowledge of the behavior of the

signals over time during developing secondary phase brain damage, and to display to a user the signals or information obtained therefrom in a way which highlights variations identified by application of said expert analytical rules which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

43 (new). A brain rescue instrument according to claim 32 wherein said computing means is arranged to apply to at least some of the signals or information obtained therefrom expert analytical rules based on knowledge of the behavior of the signals over time during developing secondary phase brain damage, and to display to a user the signals or information obtained therefrom in a way which highlights variations identified by application of said expert analytical rules which are indicative or predictive of secondary phase brain damage or a risk of secondary phase damage.

44 (new). A brain rescue instrument according to claim 36 wherein said computing means includes software including signal analysis modules arranged to perform initial signal processing and brain rescue task modules arranged to apply said expert analytical rules to data from the signal analysis modules.

45 (new). An intelligent brain rescue instrument according to claim 36 wherein in applying said expert analytical rules said computing means is arranged to compare one or more of said signals or information obtained from said signal(s) against stored information on normal range(s) for said signal(s), and the instrument is arranged to

provide an indication to a user if one or more of said signal(s) exceeds said normal range(s).

46 (new). A brain rescue instrument according to claim 36 wherein in applying said expert analytical rules said computing means is arranged to compare at least one combination of more than one signal or information obtained from said signal(s) against stored information on normal ranges for the combination(s) of signals, and the instrument is arranged to provide an indication to a user if the combination(s) of signals exceeds said normal range(s).

47 (new). A brain rescue instrument according to claim 36 wherein in applying said expert analytical rules said computing means is arranged to apply multiple evaluation processes to at least some of the signals.

48 (new). A brain rescue instrument according to claim 36 wherein in applying said expert analytical rules said computing means is arranged to compare one or more signal(s) acquired from a patient or information obtained from said signal(s) to signals previously acquired from the same patient or information obtained therefrom.

49 (new). A brain rescue instrument according to claim 10 arranged to store at least some of said signals or information obtained from at least some of said signals, acquired from a patient over a number of hours.

50 (new). A brain rescue instrument according to claim 10 arranged to store at least some of said signals or information obtained from at least some of said signals, acquired from a patient over one or more days.

51 (new). A brain rescue instrument according to claim 36 arranged to store at least some of said signals or information acquired from a patient over a number of hours or days and to apply said expert analytical rules to said stored signals or information to identify variations in said signals occurring over a number of hours or days.

52 (new). A brain rescue instrument according to claim 36 arranged to apply said expert analytical rules to stored information acquired from a patient over time and to provide an indication to a user of a likely neural outcome for the patient.

53 (new). A brain rescue instrument according to claim 10 including a software based advisor or help system arranged to provide expert advice based on rules or models in the software to assist a clinician.

54 (new). A brain rescue instrument according to claim 10 including stored representative examples of variations of signals or combinations or groups of signals indicative or predictive of secondary phase brain damage, which may be called up by a user.

55 (new). A brain rescue instrument according to claim 10 useful in the detection of signals or information likely to be erroneous, wherein said group of signals includes one or more of:

a signal or signals indicative of abnormally low signal amplitude,

a signal or signals indicative of abnormally high signal amplitude,

a signal or signals indicative of amplifier clipping,

a signal or signals indicative of the presence of electrical interference,

B1 a signal or signals indicative of artefact information,

a signal or signals indicative of electrode impedance,

a signal or signals indicative of mains hum.

56 (new). A brain rescue instrument according to claim 10 wherein said computing means and said input means occur at the same physical or geographical location.

57 (new). A brain rescue instrument according to claim 10 wherein said computing means and said input means occur at different physical or geographical locations.

58 (new). Computer means according to claim 10 wherein the processing of said acquired signals or information obtained from input means and display of said acquired signals or information to a user occurs at different physical or geographical locations.